SHRI MATA VAISHNO DEVI UNIVERSITY, KATRA

School of Mechanical Engineering

B. Tech. (ME) Minor 1 Examination (Even) 2018-19

Entry No: | | | | | | | | | |

Date:

Total Number of Pages: [01]

Total Number of Questions: [04]

Course Title: Dynamics of Machines

Course Code: MEL 2018

Time Allowed: 1.5 Hours **Max Marks: [20]**

Instructions / NOTE

i. Attempt All Questions.
ii. Support your answer with neat freehand sketches/diagrams, wherever appropriate.
iii. Assume an appropriate data / information, wherever necessary / missing.

	Section - A		
Q1.	In a slider crank mechanism, the length of the crank and connecting rod are 150 mm and 600 mm respectively. The crank position is 60° from inner dead centre. The crank shaft speed is 450 r.p.m. (clockwise). Using analytical method, determine: 1. Velocity and acceleration of the slider, and 2. Angular velocity and angular acceleration of the connecting rod.	[05]	
Q2.	If the crank and the connecting rod are 300 mm and 900 mm long respectively and the crank rotates at a constant speed of 250 r.p.m., determine:1. The crank angle at which the maximum velocity occurs, and 2. Maximum velocity of the piston.	[04]	

Q3.	Four masses A, B, C & D are completely balanced. Masses C & D make angles of 90^0 and 210^0 respectively with B in the same sense. The planes containing B & C are 300 mm apart. Masses A, B, C & D can be assumed to be concentrated at radii of 360, 480, 240 and 300 mm respectively. The masses B, C and D are 20 kg, 20 kg & 18 kg respectively. Determine the (i) mass A and its angular position,(ii) positions of planes A & D.	[05]	
Q4.	Four masses m_1, m_2, m_3 & m_4 are 200 kg, 300 kg, 240 kg & 260 kg respectively. The corresponding radii of rotation are 0.2 m, 0.15 m, 0.25 m & 0.3 m respectively and the angles between successive masses are 45^0, 75^0 and 135^0. Find the position and magnitude of the balance mass required, if the radius of rotation is 0.2 m.	[06]	